3. (2+8 points) The logistic model for population growth is a model that accounts for the fact that population cannot grow indefinitely. The formula for the logistic model is given by $P(t) = \dfrac{L}{1 + Ae^{-kt}}$ where L and A are positive constants.

(a) The carrying capacity is the horizontal asymptote of $P(t)$. What is the carrying capacity? What does this mean in practical terms?

(b) List the steps you would take to find the value of t for which the population is growing the fastest? Give reasons for each step. You do **NOT** have to carry out any of these steps!!!!